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DISPERSED RECREATION ON THREE FOREST ROAD SYSTEMS IN WASHINGTON AND OREGON: FIRST YEAR DATA [1]

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ABSTRACT

Data produced during the 1st year of a 3-year study of dispersed road recreation along forest roads in Washington and Oregon are described in this report. Dispersed road recreation includes both overnight camping at dispersed undeveloped sites and day activities which take place along and adjacent to forest roads.

A Code-A-Site inventory identified 622 camper-established sites on 319 miles of road in the three study areas, most of them located near water. Dispersed use of the three study areas was concentrated on weekends and holidays. In one of the areas, 40 percent of the use was during elk season. Observations of 1,613 dispersed recreation parties, and conversations with 630 of them, indicated that 91 percent had previously visited the areas and 85 percent lived within 100 miles.

KEYWORDS: Recreation (dispersed road).

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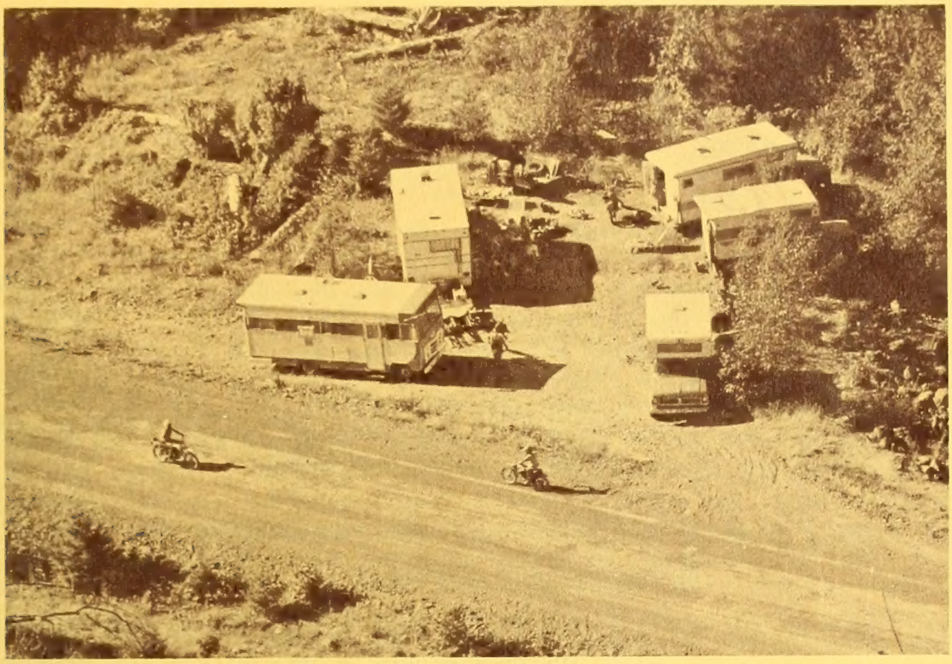
Dispersed road recreation, defined as day activities and camping at informal, undeveloped sites (generally user established) along forest roads, appears to be increasing on National Forests, other roaded multiple use public lands and private forest lands open to public entry. Dispersed road recreation differs from use at developed campgrounds and recreation areas in that no official facilities are provided. Dispersed road recreation also differs from dispersed roadless recreation in adjacent Wilderness or back country because the activity occurs along forest roads accessible by passenger vehicles.



Dispersed road recreation, defined as day-use activities and camping at informal sites along forest roads, is increasingly evident in many multiple use areas.

The National Forest System contains nearly 25,000 miles of hard surface forest highways and more than 200,000 miles of gravel and dirt forest roads along which dispersed recreation can take place. Data on use of these National Forest opportunities are sketchy, in part because of the dispersed nature of the activity and its occurrence at unofficial, user established sites. Recent estimates indicate, however, that driving for pleasure on these roads totals 45 million visitor days annually with possibly another 60-80 million visitor days spent in other dispersed activities in roaded areas such as hunting, fishing, and berrypicking (USDA Forest Service 1976a). The importance of these uses is emphasized in the recently recommended program direction for the Forest Service prepared under the Forest and Rangeland Renewable Resources Planning Act of 1974.

There are frequently signs of dispersed recreation at a variety of road locations, such as forest openings along streams or lakes, or where it is possible to get off forest roads to a pleasant grove of trees or viewpoint. A wide variety of activities are involved. Fishermen, berrypickers, campers, firewood cutters, hikers, hunters, motorbike riders, picnickers and off-road vehicle users are among the recreationists that enjoy these settings. The growing use of dispersed settings is probably related to such factors as: the increased numbers of motorhomes, pickup campers, and trailers; more four-wheel drive vehicles and motorbikes that make low-standard roads more usable; extensions of logging roads to more forest lands; higher motor fuel costs that make short trips to a nearby forest more attractive than long-distance vacations; and the crowded and regimented situations prevailing at many developed campgrounds, where camping fees up to $5 or more per night are charged.

There is little published information about dispersed road recreation. A report by Lloyd and Fisher (1972) indicated that dispersed recreation at unimproved locations (including that on roaded, multiple use lands as well as in roadless areas) accounted for more use and was growing faster on the National Forests than was concentrated use at developed sites. But, except for a 1-day study near Perth, Australia (Spriggins 1975), we have found no specific studies of dispersed recreation on forest roads. There are reports on methods useful for measuring dispersed use--on roads as well as roadless areas (James and Schreuder 1972, James and Henley 1968) and many studies of dispersed wilderness recreation. One recreation textbook discusses "extensive" (dispersed) forest recreation use and its relationship to resource management (Douglas 1969). There is a growing literature on recreation activities that take place in dispersed road recreation areas, including hunting, fishing, snowmobiling, and off-road vehicle use. In British Columbia several travel guides have been published on logging road travel (Merriman and Merriman 1973a, 1973b; Bernsohn and Bernsohn 1976).

FOREST SERVICE STUDIES OF DISPERSED ROAD RECREATION IN THE PACIFIC NORTHWEST

During 1973-74, the topic of dispersed road recreation emerged in discussion between forest managers and researchers in the Pacific Northwest as a high priority for study. Increased dispersed camping was reported on many forest roads throughout the region and forest managers needed research-based information about the nature and extent of this use, the impacts it created, and the recreation values it involved. The Forest Service Recreation Research Project in Seattle carried out pilot studies of dispersed road recreation during 1974 on five forest road systems on the Mt. Baker-Snoqualmie and Deschutes National Forests in Washington and Oregon. The purpose of these pilot studies was to gather preliminary information for proposing and planning a subsequent major study of dispersed road recreation.

Pilot Study 1974

Five forest road systems were included in a 1974 pilot study. They were selected to represent a range of conditions under which dispersed recreation reportedly occurred. One of the first things observed on these roads was the presence of many dispersed, informal campsites that had been established by users. These dispersed sites appeared to be an important focal point for camping and day activities along forest roads, but there was no systematic information about their characteristics or use as they were not included in any data system. What was needed was a method of inventorying the sites systematically as to their location, characteristics, and recreation-caused impacts--data that might be important from a resource protection or recreation use standpoint. Thus, much of the pilot study efforts were devoted to developing and testing Code-A-Site: A System for Inventory of Dispersed Recreational Sites in Roaded Areas, Back Country and Wilderness (Hendee et al. 1976). Code-A-Site uses edge-punch cards and needle-sort methods (or computer if desired) to record, store, retrieve, and summarize basic data about dispersed road sites. Code-A-Site was also adapted for and tested in Wilderness and back country because of the similar, dispersed nature of campsites in those roadless locations.

The Code-A-Site inventory of the five forest road systems in the 1974 pilot study identified 368 informal sites established by users on 249 miles of forest road.[2/] Heavy use was observed at many sites on weekends and holidays by campers and day users who pursued a full range of activities. Based on the pilot study results, a cooperative 3-year study of dispersed road recreation was proposed, funded, and initiated during 1975 in cooperation with National Forest managers.

Three-Year Study 1975-77

The dispersed road recreation study is being conducted in three "case-study" areas in Washington and Oregon. During 1975, Code-A-Site inventories of all dispersed sites were completed on the forest roads in each area; the amount of dispersed camping and day use was determined; and characteristics of use and users were described from observation and conversational data. This paper describes the data collected during the 1975 field season.

A user survey is underway in 1976 to collect detailed information on the characteristics, participation patterns, preferences, and management-related attitudes of dispersed users. In 1977 the study will focus on important issues identified in the previous years of research. Ultimately, data from all three years will be synthesized in the form of planning and management guidelines for dispersed road recreation on the kind of areas studied.

THREE CASE-STUDY AREAS

Three case-study areas were selected by researchers and Forest Service managers to reflect a range of dispersed road recreation opportunities in the Washington-Oregon region. Ten criteria were to be represented among the areas including: (1) interest by local managers in participating in the study, (2) intermingled public and private land ownership, (3) current or imminent road closures to public traffic because of perceived problems, (4) a spectrum of nearby recreation opportunities including roadless areas and developed campgrounds, (5) proximity to large metropolitan areas such as Portland and Seattle for two of the areas, (6) off-road vehicle activity, (7) forest conditions typical of large categories of National Forest land,

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[2/] The pilot study data are summarized in two unpublished reports: Mack L. Hogans (1974), "Public Use of Forest Roads Pilot Study--Summer 1974. Snoqualmie National Forest, White River and Bend Ranger Districts." Unpublished summary report, 42 p., mimeogr.; and Dan Wood (1974), "Public Use of Forest Roads Pilot Study, 1974. Deschutes National Forest, Bend and Sisters Ranger Districts." Unpublished summary report, 21 p., mimeogr.

(8) current use of a range of different timber-harvesting methods, (9) fairly closed transportation systems to facilitate measuring traffic, and (10) a minimum of unusual recreation attractions that might distort study findings.

National Forest managers in Washington and Oregon were invited to submit areas meeting most of the criteria that they would like considered for inclusion in the study. A total of 28 candidate areas were submitted from which the following three areas were selected (fig. 1).

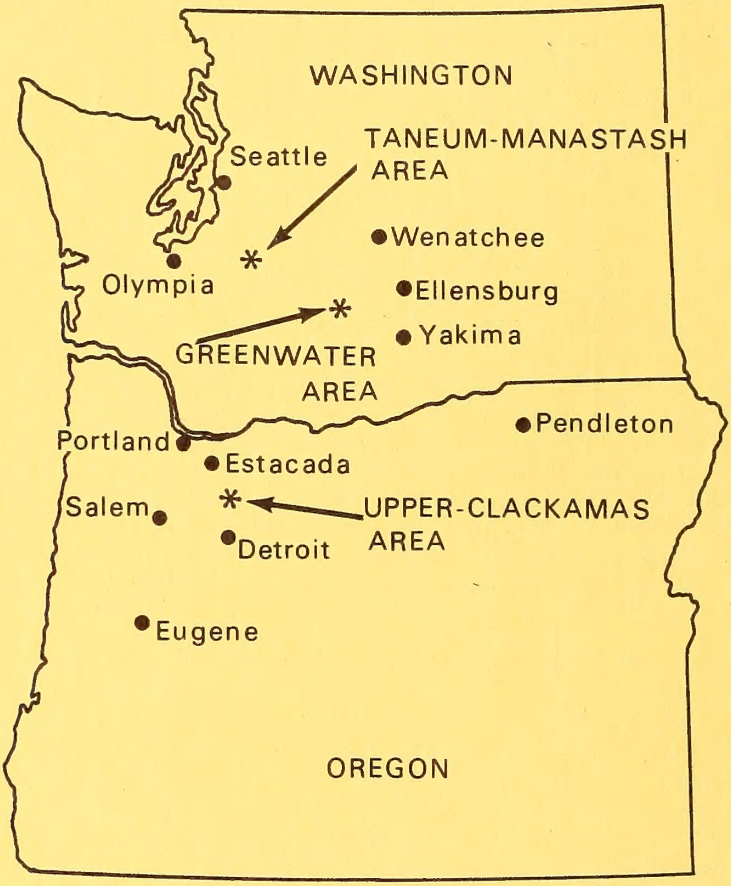

Figure 1.--Location of the Greenwater, Taneum-Manastash, and Upper-Clackamas study areas.

Greenwater Study Area

The Greenwater drainage is 60 miles southeast of Seattle on the White River Ranger District of the Mt. Baker-Snoqualmie National Forest. The main Greenwater road leaves Highway 12, a scenic cross mountain route to eastern Washington, less than 20 miles from a main entrance to Mt. Rainier National Park. There are no developed campgrounds in the study area but there are private, State, and Forest Service campgrounds within 20 miles.

In much of the area, alternative sections of land are owned by Weyerhaeuser Co. The road system has been largely constructed for timber harvest purposes and is maintained under share cost road maintenance agreements between the Forest Service and Weyerhaeuser. Douglas-fir is the major timber type; and many large clearcuts are found throughout the drainage, although shelterwood and selective salvage cuts have also been used. Active logging is in progress at several locations, and additional timber harvest and road construction are planned.

The Greenwater drainage contains 78 miles of gravel and dirt logging roads; but fire closures during 1975 reduced the road available to dispersed recreationists to 23 miles, most of which is located along the Greenwater River. The roads in the drainage provide access to several trails leading to the Pacific Crest National Scenic Trail at the head of the drainage or other back country locations.

Taneum-Manastash Study Area

The Taneum-Manastash area is on the Ellensburg Ranger District of the Wenatchee National Forest on the east side of the Cascade Mountains. The study area lies a few miles south of Interstate 90, approximately 20 miles west of Ellensburg and 6 miles south of Cle Elum, Wash. The area boundary is a 2-hour drive from Seattle. Adjacent and intermingled lands are owned by the Washington Department of Natural Resources and Burlington Northern Railroad. The L. T. Murray State Game Range also adjoins the area.

The area includes 6 miles of blacktop road along Taneum Creek, 47 miles of mainline logging road, and 44 miles of dirt spur roads. The study area covers approximately 70,000 acres and ranges in elevation from 2,000 feet along Taneum Creek to the 6,300-foot top of Quartz Mountain. There are several trailheads leading to adjacent back country and four nearby lakes. Public use in the summer includes motorbike riding, camping, fishing, and horseback riding. In the fall, the area is heavily used by deer and elk hunters. The minimally developed Taneum Creek campground, just inside the area, has 21 sites. There are also two official, minimally developed campsites at Tamarack Springs, four at South Fork of Taneum Creek Meadows, five at Keenan Meadows trailhead, and three at Quartz Springs.

The main timber species include Douglas-fir, ponderosa pine, western larch, and true fir. Local silvicultural practices include clearcutting and some selective harvest. The area has several large meadows and a long history of sheep and cattle grazing including some currently active cattle grazing allotments.

Upper-Clackamas Study Area

The Upper-Clackamas study area is on the Clackamas and Estacada Ranger Districts of the Mt. Hood National Forest. The area lies adjacent to the main Clackamas River road, a blacktop, two-lane forest highway that serves as a scenic forest loop highway from Portland through the Mt. Hood and Willamette National Forests to the town of Detroit.

The Clackamas drainage has hundreds of miles of forest roads built primarily for timber harvest, three minimally developed and three highly developed Forest Service campgrounds, and one developed picnic site in Austin Hot Springs owned by Portland General Electric Co. Popular activities in the area include fishing, rafting, and swimming in the Clackamas River and berry-picking, firewood cutting, and picnicking along the forest roads.

Since the Clackamas drainage is such a large area, only four of its roads were selected: 21 miles of the Clackamas highway from Ripplebrook to Squirrel Creek, the Fish Creek road system totaling 80 miles, 70 miles of the Oak Grove-Shellrock Creek road system, and 30 miles of the Squirrel Creek road system.

METHODS AND FINDINGS

The following descriptions of findings from the first year (1975) of the dispersed road recreation study pertain to (1) dispersed sites and their characteristics, (2) amount and patterns of dispersed use, and (3) characteristics of use and users based on observation and conversational data. The research methods used to compile the data on these three topics are described at the beginning of each section.

It should be emphasized that the findings described are limited to the case study areas described and cannot be generalized to all dispersed road recreation areas.

Dispersed Recreation Sites

Code-A-Site inventories identified a total of 622 dispersed sites on the 319 miles of road in the three case-study areas. Details of the procedures appear in a publication describing Code-A-Site (Hendee et al. 1976). A site was defined as a specific location showing evidence of recreation use, which almost always includes a fire circle and other impacts or signs of camping or recreation activity. Most of these sites (83 percent) could accommodate parties with more than one camping vehicle or tent--multiple unit sites (table 2, item 2). However, 69 percent of the parties we observed had only one tent or vehicle (table 4, item 4).

The location and characteristics of established sites provide "trace" evidence of the dispersed recreation behavior that has occurred. Together, they give a profile of the dispersed camping opportunities. They reflect behavior of recreationists in creating and using the sites and the interaction of recreation with other resource uses in taking advantage of the effects of timber harvest and road construction that created potential sites.

A. SITE LOCATION AND DENSITY

Table 1 indicates the distribution and density of sites on the river bottom, midslope, and ridgetop roads in the three areas. The density of established sites varied sharply with road location. Sites were most concentrated (about four to nine sites per mile) on river bottom roads in all three areas. Sites on midslope roads were generally located at stream crossings. Some ridgetop roads featured sites at vantage points.

The concentrated distribution of sites along the river bottoms underscores the importance of water as a dispersed recreation attraction. Eighty-four percent of all sites were located directly adjacent to or within a few hundred feet of water (table 2, item 6). The concentration of sites on river bottom roads may also reflect a tendency for central location on main roads leading into each area since even on river bottom roads the density of established sites was reduced at the more distant and less accessible locations.

Table 1.--Distribution of dispersed sites and site density on river bottom, midslope roads, and ridgetop roads in the three study areas

Road location	GREENWATER			TANEUM-MANASTASH			UPPER CLACKAMAS			TOTAL--THREE AREAS		
	Miles of road	No. of sites	Average density si./mi.	Miles of road	No. of sites	Average density si./mi.	Miles of road	No. of sites	Average density si./mi.	Miles of road	No. of sites	Average density si./mi.
River bottom roads	9	64	7.1	10	96	9.6	48	179	3.7	67	340	5.1
Midslope roads	5	23	4.6	10	57	5.7	32	25	.8	47	105	2.2
Ridgetop & side roads	9	30	3.3	75	138	1.8	121	10	.1	205	177	1.9
Total/Average	23	117	5.1	95	291	3.1	201	214	1.1	319	622	1.9

Greenwater primarily includes river bottom road which accounts for its having the highest average site density of 5.1 sites per mile of road. Fire closures and active logging during 1975 closed 45 additional miles of road containing about 20 sites in the Greenwater which would have lowered the average site density for the area to about two sites per mile, a figure comparable to the other areas.

B. SITE CHARACTERISTICS

Table 2 summarizes Code-A-Site data on 11 dispersed site variables. Other site variables available in the Code-A-Site inventory but not reported here include ground cover, crown cover, exposure, elevation, and availability of forage for recreation stock use.

The site characteristics described in table 2 are summarized in the following:

1. Site Location:

On the average about equal numbers of sites were located on main and spur roads--the most common requirement seemed to be accessibility to passenger cars. In Greenwater and Taneum more than half the sites were on spur roads, but in the Clackamas most were located on main roads.

2. Site Capacity:

Most sites are spacious in that they can accommodate several tents or recreation vehicles. Clackamas was the only area where a majority of the sites could not accommodate three or more vehicles. Taneum had the largest site capacity, apparently due to its more open, east-side forest setting. Nearly three-fourths of the sites in the Taneum area could accommodate four or more vehicles.

3. Visual Isolation:

Most sites featured some visual isolation from other campsites. Nearly 90 percent of all sites had only one to three other sites in view and 43 percent had no other sites in view. In the more crowded Greenwater area, however, only 35 percent of the sites had total visual isolation from other sites. Because of the low occupancy rates (table 2, item 11) the degree of

Table 2.--Dispersed recreation site characteristics in three roaded areas in the Pacific Northwest based on a 1975 Code-A-Site inventory [1/]

Characteristics	Greenwater		Taneum-Manastash		Upper Clackamas		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1. Sites by road location:								
Main road	49	(42)	79	(27)	123	(58)	251	(40)
Spur road	65	(55)	153	(52)	25	(12)	243	(39)
Informal road	3	(3)	41	(14)	62	(29)	106	(17)
4-wheel drive road	--	--	20	(7)	3	(1)	23	(4)
2. Site capacity:								
No vehicles, tent only	2	(2)	10	(3)	14	(7)	26	(4)
1 vehicle	12	(10)	8	(3)	58	(27)	78	(13)
2 vehicles	37	(32)	16	(6)	101	(47)	154	(25)
3 vehicles	20	(17)	47	(16)	17	(8)	84	(13)
4 and greater vehicles	46	(39)	212	(72)	24	(11)	282	(45)
3. Visual isolation, No. of other sites in view:								
0	41	(35)	128	(44)	96	(46)	265	(43)
1-3	66	(56)	137	(47)	88	(42)	291	(47)
4-5	9	(8)	23	(8)	18	(9)	50	(8)
6 and greater	1	(1)	3	(1)	7	(3)	11	(2)
4. Dispersal: No. of sites within 1/2 mile:								
0	4	(4)	7	(2)	24	(11)	35	(6)
1-3	43	(38)	108	(37)	26	(12)	177	(29)
4-5	14	(13)	44	(15)	42	(20)	100	(16)
6 and greater	51	(45)	132	(46)	120	(57)	303	(49)
5. Firewood availability:								
Abundant	12	(10)	27	(9)	52	(24)	91	(15)
Available	104	(89)	220	(75)	116	(55)	440	(70)
Scarce	0	(0)	45	(15)	40	(19)	85	(14)
None	1	--	1	--	5	(2)	7	(1)
6. Water availability:								
Adjacent to site	53	(45)	111	(38)	149	(70)	313	(50)
Available nearby	22	(19)	170	(58)	18	(8)	210	(34)
No water available	42	(36)	12	(4)	47	(22)	101	(16)
7. Toilets:								
Accessible to site	0	(0)	76	(35)	6	(3)	82	(13)
Not accessible to site	117	(100)	217	(65)	208	(97)	542	(87)
8. Facilities at site:								
None	155	(98)	207	(75)	211	(98)	533	(89)
Sign	2	(2)	49	(18)	0	(0)	51	(9)
Garbage can	0	(0)	2	--	2	--	4	--
Table	0	(0)	11	(4)	1	--	12	(2)
9. Estimated environmental impact:								
Extreme	2	(2)	0	(0)	8	(4)	10	(2)
Heavy	11	(9)	47	(16)	13	(6)	71	(11)
Moderate	36	(31)	146	(50)	76	(35)	258	(41)
Light	68	(58)	100	(34)	117	(55)	285	(46)
10. Estimated frequency of site use:								
Heavy	7	(6)	0	(0)	10	(5)	17	(3)
Frequent	26	(22)	35	(12)	14	(6)	75	(12)
Moderate	18	(15)	62	(21)	40	(19)	120	(19)
Slight	16	(14)	99	(34)	53	(25)	168	(27)
Infrequent	50	(43)	97	(33)	96	(45)	243	(39)
11. Recorded frequency of use:								
Heavy (25-56 nights)	2	(2)	13	(4)	9	(4)	24	(4)
Frequent (19-24 nights)	1	--	10	(3)	9	(4)	20	(3)
Moderate (13-18 nights)	7	(6)	22	(8)	23	(11)	52	(8)
Slight (7-12 nights)	22	(19)	42	(14)	40	(19)	104	(17)
Infrequent (1-6 nights)	24	(21)	88	(30)	73	(34)	185	(29)
Unused	61	(52)	121	(41)	60	(28)	242	(39)

[1/] All totals for study area subsections add to approximately 117 for Greenwater, 293 for Taneum-Manastash, and 214 for the Upper Clackamas. Totals have been omitted to save space. All percentages add to 100 down the page with the exception of number 8, Facilities at site, which does not have mutually exclusive categories.

isolation afforded users of these sites is greater than implied by the visual proximity to other sites.

4. Dispersal:

Despite visual isolation, most sites were not dispersed evenly throughout each area but were concentrated along popular stretches of road. More than half of the sites in Greenwater and Taneum, and nearly half in Clackamas, were located within 1/2 mile of at least four other sites.

5. Firewood Availability:

Firewood is definitely not the problem for campers in dispersed areas that it is in most developed campgrounds. Firewood, either natural or from logging slash, was available at almost all sites.

6. Water Availability:

The affinity of dispersed recreationists for water was evident in the location of 84 percent of all sites directly adjacent to or nearby a river or stream. Taneum, where there were less river bottom roads and fewer streams, had many sites established adjacent to meadows. In that area, water serving many sites was found in springs rather than rivers and year-round streams.

7. Toilet Accessibility:

No sites in the Greenwater were accessible to a toilet, and only six in Clackamas, but 76 sites (25 percent) in Taneum were within usable reach of an outhouse toilet or makeshift latrine, many of them apparently constructed by users at sites attracting extended stays by hunters.

8. Facilities:

There is a small scattering of facilities among the sites, mostly fire-prevention signs, some garbage cans put out by forest managers, and a few tables constructed by campers.

9. Environmental Impacts:

Field judgments of the category of environmental impact from use indicated that from 10 to 17 percent of the sites were extremely or heavily impacted, and most were judged moderately or lightly impacted. The sites that were judged extremely or heavily impacted appeared to be among the most popular with users. The impact did not seem to deter people from using them.

10. Estimated Use:

During the Code-A-Site inventory an estimate of the frequency of use was made for each site based on impacts and other evidence of recreation activity (table 2, item 10). These field estimates implied that a large proportion of sites were used very infrequently and that a minority of the sites accommodated most of the dispersed recreation use. There was a strong relationship (Gamma .58) between these estimated frequency categories of use and categories of observed use which demonstrates the "ballpark" accuracy of these field estimates.

11. Observed Use:

During the 1975 summer, the actual occupancy of each dispersed site was recorded by patrolmen (table 2, item 11). These measured data indicated the same pattern as the estimated frequency of use--a few sites sustain most of the use in all the areas. Thirty-nine percent of the sites were not used at all during the summer and 29 percent were used only 1 to 6 nights.

AMOUNT AND PATTERNS OF DISPERSED USE

A check station provided a complete tabulation of day use in the Greenwater, while estimates of the amount of dispersed day use in the Taneum and Upper-Clackamas areas were derived from mechanical traffic counter data, calibrated by observations during sample weekdays, weekends, and holiday weekends. Because of a large expected sampling error from the procedures used and to establish a baseline of use over time, use will be sampled again during the second year of the study. In all three areas overnight use was determined from daily counts by patrolmen.

The accuracy of use estimates varied between areas. The Greenwater check station provided the most accurate use data as recreation entry was directly observed. Table 3 shows the amount of dispersed day and overnight use in the three areas during weekdays, weekends, and holiday weekends (July 4 and Labor Day), and for deer and elk seasons in the Taneum area. Figure 2 shows the distribution of use from day to day in the Greenwater area. In the Clackamas, use estimates were compiled from three sources: Electronic traffic counter data recorded by field assistants, a special traffic count study by the Forest, and official Recreation Information System (RIM) samples being used for developing national use estimates. In the Taneum, use estimates were weakest because they were based on pneumatic hose traffic counter data calibrated by only 6 sample days. Taneum has the most complicated use patterns with three major entry points and a complicated network of interior roads. A special effort will be made to improve use estimates in this area the second year of the study.

A. PEAK USE AND DAY USE

The three study areas attracted 111,484 man-days of use. This figure understates total dispersed use because it is restricted to July 3 through Labor Day and excludes hunting season, except for Taneum. Our casual observation suggests that considerable spring and fall weekend camping and day use occurs depending on weather. Some winter use also occurs.

Data in table 3 and figure 2 indicate that both dispersed day use and camping are peak use phenomena on weekends and holiday weekends in these areas since low levels occur during weekdays. Use during weekends and holidays constituted a majority of the total summer use except in Taneum where hunting seasons accounted for a majority of the use. The wide fluctuation in weekend and weekday use is especially apparent in figure 2 which shows daily use for the Greenwater area.

Table 3.--Amount of dispersed road recreation use in the Greenwater, Taneum-Manastash, and Clackamas area drainages--Summer/Fall 1975.

Use	Day use			Overnight			Total		
	Number	Aver./ day	Percent	Number	Aver./ day	Percent	Number	Aver./ day	Percent
	Man-Days--Any Portion of 24-Hour Period--12 Noon to 12 Noon								
	GREENWATER DRAINAGE, MT. BAKER-SNOQUALMIE NATIONAL FOREST, WASHINGTON								
[1] 36 weekdays (Mon-Th)	2,088	58	(69)	936	26	(31)	3,024	84	(27)
21 weekend days (Fri, Sat, Sun)	4,263	203	(69)	1,932	92	(31)	6,195	295	(55)
6 holiday weekend days	1,522	253	(74)	532	155	(26)	2,054	342	(18)
TOTAL--63 DAYS	7,873		(70)	3,400		(30)	11,273		(100)
	TANEUM-MANASTASH DRAINAGE, WENATCHEE NATIONAL FOREST, WASHINGTON								
[2] 36 weekdays (Mon-Th)	4,068	113	(72)	1,584	44	(28)	5,622	156	(11)
21 weekend days (Fri, Sat, Sun)	5,859	279	(61)	3,822	182	(39)	9,681	461	(20)
7 holiday weekend days	2,856	408	(48)	3,150	450	(52)	6,006	858	(12)
21 deer days	4,851	231	(64)	2,730	130	(36)	7,581	361	(15)
14 elk days	11,225	802	(54)	9,414	672	(46)	20,639	1,474	(42)
TOTAL--99 DAYS	28,859		(58)	20,700		(42)	49,529		(100)
	CLACKAMAS DRAINAGE, MT. HOOD NATIONAL FOREST, OREGON								
Clackamas highway (21 mi)									
36 weekdays (Mon-Th)	9,396	261	(77)	2,880	80	(23)	12,276	341	(38)
21 weekend days (Fri, Sat, Sun)	11,899	567	(82)	2,610	124	(18)	14,509	690	(45)
6 holiday weekend days	4,472	745	(93)	720	120	(14)	5,192	865	(17)
Subtotal	25,761		(81)	6,210		(19)	31,977		(100)
Fish Creek (80 mi)									
36 weekdays (Mon-Th)	5,724	159	(96)	216	6	(4)	5,940	165	(32)
21 weekend days (Fri, Sat, Sun)	7,420	353	(78)	2,100	100	(22)	9,520	453	(51)
6 holiday weekend days	2,965	494	(91)	280	46	(9)	3,245	540	(17)
Subtotal	16,109		(86)	2,596		(14)	18,705		(100)
Oak Grove-Shellrock Creek (70 mi)..	.........Use Data Not Yet Available								
Squirrel Creek (30 mi)................................	.....Use Data Not Yet Available								
Total, two roads									
Weekday	15,120	420	(83)	3,096	86	(17)	18,216	506	(36)
Weekend	19,319	919	(80)	4,710	224	(20)	24,029	1,144	(47)
Holiday	7,437	1,240	(88)	1,000	166	(12)	8,437	1,406	(17)
TOTAL--63 DAYS	41,376		(83)	8,806		(17)	50,682		(100)

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[1] Based on check station count.

[2] These use figures are based on mechanical traffic counts adjusted by sample observations and a calculated average of 4 persons per vehicle.

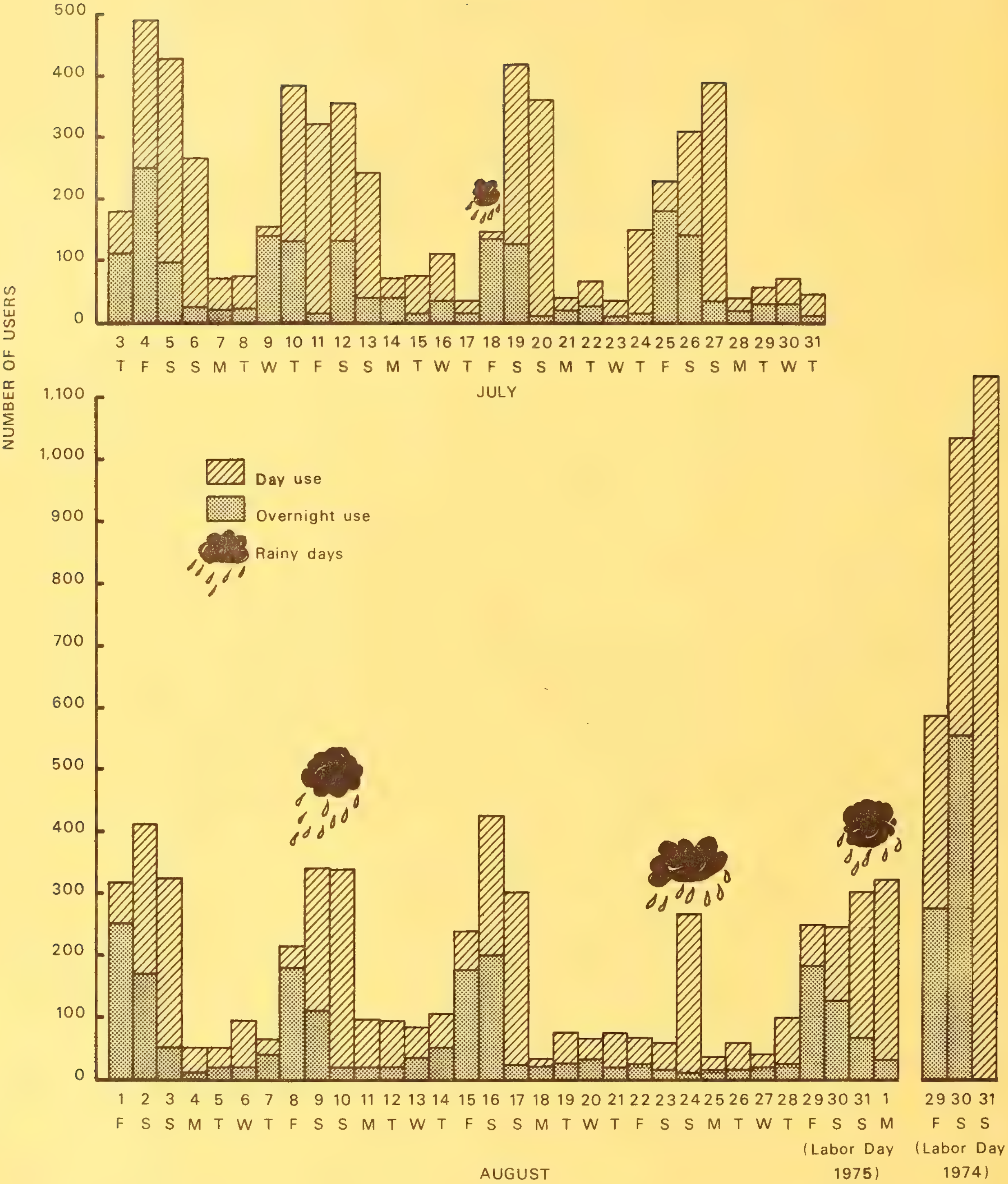

Figure 2.--Daily use in the Greenwater area, summer of 1975 and Labor Day weekend, 1974, based on total count.

Day use was more prevalent than camping in all three areas. Total day use (any portion of a day spent in the area) averaged 70 percent with Clackamas above average and Taneum below average. If data are aggregated in terms of number of visits--that is, visitors are counted only once when entering the area whether or not they stay more than 1 day--the balance is tipped even farther toward day use. The only location where overnight camping exceeded day use was during holidays in the more remote Taneum area (52 percent overnight use), and it approached half the use (46 percent) in that area during elk season.

We were quite surprised at the large proportion of day use since so much of our attention had previously been focused on dispersed sites that appeared to be predominately used for camping. Two kinds of day use were observed: (1) day users on 1-day outing from home and (2) day users who were camped in nearby dispersed areas or developed campgrounds. Information about the relative proportion of these groups is being collected during the summer of 1976 as part of the user survey. Driving for pleasure on forest roads in cars, pickups, jeeps, or motorbikes, berrypicking, fishing, hunting, firewood cutting, or hiking--in short, a whole range of recreation activities seemed to attract day users as well as campers.

A variety of activities seem to attract dispersed road recreationists including camping and relaxing.

We observed that dispersed use was very dependent on weather, in that daily use would rapidly fluctuate with weather conditions. Figure 2 shows daily use in the Greenwater area, including 6 rainy weekend days and Labor Day weekend. As figure 2 indicates, dispersed use is severely depressed during inclement weather. Use during the wet Labor Day weekend totaled 794 visitors in 1975 compared to 2,755 visitors during 1974 when it was warm and sunny.[3] But even on rainy Fridays (such as July 18 and August 8) or Saturdays (August 23), dispersed use will apparently rebound if the sun shines the next day. This suggests a relationship between short-term dispersed road use and weather conditions. We suspect that dispersed road recreation, with its high proportion of day use, is more spontaneous than developed campground or roadless area use and may fluctuate more rapidly in response to local weather conditions.

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[3] Table 2 shows no overnight recreation use for Sunday of Labor Day weekend 1974, nor any use for Labor Day (Monday 1, 1974). The Greenwater drainage was evacuated at about 3:30 p.m. on Sunday, August 31, 1974, when a forest fire swept the area.

The amount of dispersed use during hunting season was impressive in the Taneum area, with average daily use 80 percent higher during elk season than even during holiday weekends. The Clackamas is not noted for good hunting and forest managers report minimal use during both deer and elk season. Greenwater has only fair deer hunting; but if a heavy snow drove elk from Mt. Rainier to the Greenwater winter range before mid-November, the area would certainly attract many elk hunters. This usually doesn't happen and didn't occur during 1975 when forest managers' reports and our periodic checks indicated few users in the area during deer or elk season.

The importance of elk hunting in the Taneum was underscored in conversations with several summer visitors who said they were there "to see how the elk were doing," and even during deer season, many hunters said they were "more interested in scouting out the elk situation than in bagging a deer." Sunday before the Monday opening of elk hunting, nearly 2,000 hunters crowded the area filling nearly all the 291 dispersed sites, many of which were used only during elk season.

CHARACTERISTICS OF USE AND USERS

During the 1975 summer, field assistants assigned to each area systematically patrolled the roads each Thursday through Monday. They wore Forest Service uniforms, drove government cars (except that a trailbike was often uses in the Taneum area), and contacted users at all occupied sites in the same manner as other Forest Service recreation or fire patrolmen.[4/] During these routine public contacts, the field assistant/patrolman made observations about the party at each site and during conversation noted such things as where they were from, what activities they were pursuing, if they had been to the area before, and so forth. Almost all the users were talkative; in fact, breaking off conversations was often much harder than starting them. In this manner we gathered observational data on 1,613 dispersed recreation parties, supplemented by conversations that evolved with 630 of them.

Table 4 indicates the following data for the parties contacted--observed and/or conversed with: (1) length of stay, (2) total parties using various kinds of camping equipment, (3) party size, (4) number of camping units per party, (5) total age distribution, (6) residence, (7) distance traveled to the area, (8) previous experience in the area, and (9) the proportion of parties with motorbikes or four-wheel drive vehicles and the total number of machines observed.

The limitations of these observational and conversational data must be kept in mind. They are not representative of all dispersed users. Although

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[4/] The field assistants were Mack Hogans at Upper Clackamas, University of Washington cooperative research assistants John Morrell at Taneum-Manastash, and Chris Christensen and Dan Wood at Greenwater. (Dan Wood is now recreation planner with the Bureau of Land Management at Cañon City, Colo.)

Table 4.--Selected characteristics of dispersed road recreation parties in three areas based on observations and conversational contact by patrolmen

Characteristics	Greenwater		Taneum-Manastash		Upper Clackamas		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1. Length of stay:								
Campers only								
2 days, 1 night	53	(32)	249	(53)	347	(65)	649	(56)
3 days, 2 nights	96	(57)	99	(21)	126	(24)	321	(27)
4 days, 3 nights	5	(3)	35	(7)	45	(9)	85	(7)
5 days and greater	13	(8)	90	(19)	13	(2)	116	(10)
No. of parties observed	162	(100)	473	(100)	531	(100)	1,171	(100)
Average stay of overnighters (nights)	2.1		3.1		1.6			
2. Total camping units observed:								
Tents	41	(16)	154	(23)	180	(25)	375	(23)
Pickup campers	74	(28)	232	(35)	218	(30)	524	(32)
Trailers	80	(31)	171	(25)	125	(17)	376	(23)
Motorhomes	22	(8)	21	(3)	25	(3)	68	(4)
Vans and buses	12	(5)	38	(6)	75	(11)	125	(7)
Open campers	11	(4)	21	(3)	94	(13)	126	(7)
Other	21	(8)	32	(5)	6	--	59	(4)
No. of parties observed	261	(100)	669	(100)	723	(100)	1,654	(100)
3. Party size:								
1	6	(4)	30	(6)	32	(12)	68	(7)
2	32	(19)	145	(30)	78	(28)	255	(28)
3	9	(6)	81	(17)	40	(14)	130	(14)
4-6	55	(33)	138	(29)	76	(28)	269	(29)
7 and greater	63	(38)	86	(18)	49	(18)	198	(22)
No. of parties observed	165	(100)	480	(100)	275	(100)	920	(100)
Aver. party size	6		4.8		4.6		5	
4. No. of camping units (tents and recreation vehicles per party)								
1	110	(62)	386	(69)	511	(71)	1,007	(69)
2	29	(16)	106	(19)	140	(19)	215	(19)
3	27	(15)	32	(6)	46	(6)	105	(7)
4-6	10	(6)	21	(4)	21	(3)	52	(4)
7 and greater	2	(1)	11	(2)	1	--	14	--
No. of parties observed	178	(100)	556	(100)	719	(100)	1,453	(100)
Aver. no. of camping units per party	1.8		1.6		1.3		1.5	
5. Age of participants:								
Adults	165	(57)	334	(62)	283	(64)	782	(62)
Teens	30	(11)	70	(13)	65	(15)	165	(13)
Children	93	(32)	131	(25)	96	(21)	320	(25)
No. of parties observed	288	(100)	535	(100)	444	(100)	1,267	(100)
6. User residence:								
Nearby community	24	(17)	65	(23)	13	(9)	102	(18)
Metropolitan	109	(80)	149	(52)	88	(64)	346	(62)
Other Washington (Greenwater and Taneum)	4	(3)	62	(22)	N/A		66	(12)
Other Oregon (Clackamas)	N/A		N/A		20	(15)	20	(4)
Out of state	0	(0)	9	(3)	16	(12)	25	(4)
No. of parties observed	137	(100)	285	(100)	137	(100)	559	(100)
7. Distance traveled (miles):								
0-50	38	(28)	64	(25)	19	(19)	121	(24)
51-100	94	(70)	129	(50)	75	(74)	302	(61)
101-150	2	(2)	50	(20)	0	(0)	52	(10)
151 and greater	0	(0)	12	(5)	7	(7)	19	(4)
No. of parties observed	134	(100)	255	(100)	101	(100)	490	(100)
8. Previous experience in study area:								
Yes	138	(95)	176	(89)	104	(88)	418	(91)
No	8	(5)	20	(11)	14	(12)	42	(9)
No. of parties observed	146	(100)	196	(100)	118	(100)	460	(100)
9. Special recreation equipment:								
Motorcycles								
No. and percent of parties observed with motorcycles	71	(41)	146	(22)	55	(7)	272	(12)
Total No. motorcycles observed	155		364		95		614	
Four-wheel drive vehicles:								
No. and percent of parties observed with four-wheel drives	13	(7)	99	(15)	25	(3)	137	(8)
Total No. four-wheel drives observed	27		141		33		201	

roads were systematically patrolled each day, our contacts constitute a convenience sample--we made observations or contacted users when and where we could. The data are strongly biased toward dispersed campers since most contacts were made at sites where users were camped. Only 26 percent of our contacts were with day users because they were often driving on roads or engaging in day activities that made contact difficult. Nevertheless, the data are informative, they provide the beginning of a user profile on dispersed campers and will be useful in planning and executing a representative survey of dispersed users during 1976. The data can be summarized as follows:

1. Length of Stay:

We collected length of stay information on 1,165 camping parties. More than half (55 percent) of the overnight campers stayed only one night and nearly 85 percent stayed two nights or less. Very few of the parties contacted stayed more than two nights, and most of them were in the Taneum area during hunting season.

2. Camping Equipment:

Of the 1,658 camping units we observed, pickup campers were the most popular (32 percent) followed by about equal proportions of tents and trailers (23 percent). For some reason, tents were more popular in Clackamas and trailers in Greenwater. Only 4 percent of the campers we observed had motorhomes; 7 percent had either vans, busses, or some other vehicle; and 7 percent camped in the open.

3. Party Size:

Party size varied from 1 to 60 people. There were many small parties of one or two persons (35 percent) and 14 percent had three persons. But there were also many larger parties--29 percent had four to six people, and 22 percent had seven persons or more.

4. Number of Camping Units per Party:

A large majority of the parties observed (69 percent) included only one camping unit--that is, one tent or one vehicle, etc.; 19 percent had two and 11 percent had three or more camping units.

5. Age:

A full spectrum of age groups appear to participate in dispersed camping. Among the 1,267 persons we observed closely enough to determine age, 62 percent were adults, 13 percent were teenagers, and 25 percent were children.

6-7. Residence, and Distance Traveled to the Area:

Most of the dispersed campers we contacted lived within a 2-hour drive of the study area. One-fourth of the campers lived within 50 miles of the study area, and 85 percent lived within 100 miles. Only 4 percent lived farther away than 150 miles. Eighteen percent came from nearby communities, 62 percent from the nearest large metroplitan area, either Portland or Seattle, 15 percent from elsewhere in the State, and only 4 percent from out of State.

8. Previous Experience:

A vast majority (91 percent) of the users had been to the same area before. Conversations with a number of them suggest that many users come back to the same areas a great many times.

9. Special Recreation Equipment:

We recorded data pertaining to motorbike and four-wheel drive use since there is particular concern about the impacts of these activities. Twelve percent of the parties we observed had a total of 272 motorbikes. Greenwater in particular was a motorbike area and 41 percent of the parties we observed there had at least one motorbike with them.

Of the parties observed, 8 percent had a total of 201 four-wheel drive vehicles.

We suspect that had our observations included more day users, we would have recorded more motorbikes and four-wheel vehicles. During the 1974 pilot study, we observed 540 motorbikes and 82 four-wheel drive vehicles in the Greenwater during just the Labor Day weekend.[5/]

We observed dispersed users engaging in a full range of activities, but we do not have the data to rank activities by popularity. The range of activities included: camping, fishing, hunting, hiking, berrypicking, woodcutting, motorbike riding, off-road vehicle use, horseback riding, swimming, rafting, painting, nature study, plant collection, mushroom hunting, sun bathing, drinking, socializing, playing games such as frisbee or horseshoes, and relaxing.

HUMAN WASTE IMPACTS FROM DISPERSED RECREATION

One other problem studied relates to the potential impact of human waste disposal from dispersed road recreation--a matter of concern to many managers we've talked to. In fact, the Upper-Clackamas study area was closed to dispersed camping a few years ago, in part to protect against potential impacts of human waste disposal on water quality. In conjunction with our research on dispersed road recreation, a separate 2-year study of human waste impacts is being conducted in the Greenwater area. Both biological and behavioral aspects of the problem are being studied to determine how extensive the impacts are and what human activity might be modified to control them.[6/] Following are some preliminary data that indicate the nature of the waste problem.

[5/] See Hogans (1974), footnote 2.

[6/] The behavioral aspects of the human waste problem is being studied under the supervision of Dr. Roger Clark of the Forest Service Recreation Research Project with Chris Christensen, doctoral student at the University of Washington. Biological and water quality aspects are being studied under a cooperative agreement between the Forest Service and Central Washington State College under the Supervision of Professor Robert Pacha.

A total of 72 campsites serving 371 camping parties and nearly 2,000 persons in the Greenwater drainage were studied to determine impacts from litter, garbage, sink waste water, and biological waste from humans and their domestic pets. Half the camping parties had either dogs or cats with them, two-thirds of which were allowed to run loose.

Based on a careful inspection of each site after each party left, only 10 percent of the parties left garbage and one-third left litter. The incentive system for litter control (Clark et al. 1972) was applied to these sites over Labor Day which reduced the litter level 65 percent.

About half of the parties with recreational vehicles did not contain their sink waste water but let it run out on the ground.

Two-thirds of the recreation vehicles did not have self-contained toilet facilities. More than half the parties left toilet tissue in the vicinity of the campsite. Toilet tissue was usually concentrated in 1 to 11 separate human waste areas near each campsite, with half of the tissue found within 50 feet of the campfire. In 82 percent of the toilet tissue occurrences, no fecal matter was found. We can conclude only that no fecal matter had been left, it had been buried, or was disturbed or consumed by animals.

The potential impact of waste disposal from dispersed road recreation is a priority topic for research. Information is needed on how extensive and serious the environmental, health, and esthetic impacts are and how they can be managed within acceptable tolerances.

SUMMARY AND CONCLUSION

The data presented in this paper come from only the 1st year of a 3-year study of dispersed road recreation in three case-study areas. Since the use data do not come from a representative sample, any conclusions must be regarded as tentative. The use data will be used to plan subsequent research. It highlights the need for a representative survey of users to determine more clearly: who they are, where they come from, how often and what kind of experiences they seek, what activities they engage in, what impacts result, what conflicts occur among recreation users and other resource uses. There is also a need to know how dispersed users feel about several resource management issues that may affect them including: sanitation, waste disposal, and water use, fire hazard and prevention, facilities at dispersed sites, contact with agency patrolmen, crowding, regulation or restrictions on use, road access, standards and potential road closures, and impact of timber harvest on the visual resource.

Only with more complete information on the above issues can dispersed recreation policy be developed by public and corporate landowners to optimize the resource costs and human values involved.

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